--41. A method of revascularizing a portion of a patient's myocardium comprising:

positioning an electrode terminal in close proximity to a target site on a wall of the patient's heart; and

applying high frequency voltage to the electrode terminal, the high frequency voltage being sufficient to volumetrically remove tissue at the target site.

42. The method of claim 41 further comprising applying high frequency voltage between the electrode terminal and a return electrode, the high frequency voltage being sufficient to volumetrically remove tissue at the target site.

43. The method of claim 41 further comprising advancing at least a surface of the electrode terminal into a space vacated by the removed tissue.

44. The method of claim 43 wherein the surface of the electrode terminal is advanced beyond a plane formed by the outer surface of the heart wall.

45. The method of claim 41 further comprising applying sufficient high frequency voltage to the electrode terminal to promote revascularization of myocardial tissue in the region of the target site.

46. The method of claim 41 further comprising axially translating the electrode terminal to form a channel through at least a portion of the heart wall.

47. The method of claim 41 further comprising:

introducing at least a distal end of an electrosurgical catheter into the ventricle of the heart; and

positioning the distal end of the catheter in close proximity to the endocardium.

48. The method of claim 47 further comprising introducing the electrosurgical catheter through a percutaneous penetration in the patient.

49. The method of claim 41 further comprising:

introducing at least a distal end of an electrosurgical probe through an opening in the patient's chest cavity; and

positioning the distal end of the probe in close proximity to the epicardium.

50. The method of claim 49 wherein the probe is introduced through an intercostal penetration in the patient.

51. The method of claim 41 further comprising an electrode array including a plurality of electrically isolated electrode terminals.

52. The method of claim 41 wherein the electrode terminal comprises a single electrode adjacent to a distal end of an electrosurgical probe.

53. The method of claim 41 wherein the return electrode is located on an external surface of the patient's body.

54. The method of claim 41 wherein the return electrode and the electrode terminal are both located on an electrosurgical probe.

55. The method of claim 41 further comprising controlling the depth of tissue removed from the myocardium.

56. The method of claim 41 further comprising locating electrically conductive fluid between the electrode terminal and the heart wall.

57. The method of claim 42 further comprising locating electrically conductive fluid between the electrode terminal and the return electrode and generating a current flow path from the electrode terminal through the electrically conductive fluid to the return electrode.

58. The method of claim 56 wherein the electrically conductive fluid comprises isotonic saline.

59. The method of claim 41 further comprising forming a channel within said region of the myocardium.

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60. The method of claim 41 further comprising forming a hole within said region of the myocardium.

61. The method of claim 46 further comprising forming a revascularizing channel with a lateral dimension of about 1.5 to 3.0 mm.

62. The method of claim 46 further comprising positioning a radially expandable lumenal prosthesis in the channel to maintain patency of the channel.

63. The method of claim 46 wherein the channel is curved.

64. The method of claim 46 wherein the channel has first and second openings on one side of the heart wall, and a substantially U-shape therebetween.

65. The method of claim 46 wherein the channel has a depth of about 1.0 to about 4.0 cm deep.

66. The method of claim 41 further comprising aspirating fluid and/or solid products from the target site.

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67. A method of revascularizing a portion of a patient's myocardium comprising:

positioning an electrode terminal in close proximity to a target site on a wall of the patient's heart; and

applying high frequency voltage to the electrode terminal, the high frequency voltage being sufficient to promote revascularization of myocardial tissue in a region of the target site.

68. The method of claim 67 wherein blood supply is restored to the myocardial tissue in the region of the myocardium.

69. The method of claim 67 wherein revascularization of myocardial tissue is at least partly accomplished by volumetrically removing a portion of the tissue in said region.

70. The method of claim 67 wherein revascularization of myocardial tissue is at least partly accomplished by forming a channel within said region of the myocardium.

71. The method of claim 67 wherein revascularization of myocardial tissue is at least partly accomplished by forming a hole within said region of the myocardium.

72. The method of claim 67 further comprising advancing at least a distal surface of the electrode terminal into a space vacated by the removed tissue.

73. The method of claim 67 further comprising:

introducing at least a distal end of an electrosurgical catheter into the ventricle of the heart; and

positioning the distal end of the catheter in close proximity to the endocardium.

74. The method of claim 67 further comprising:

introducing at least a distal end of an electrosurgical probe through an opening in the patient's chest cavity; and

positioning the distal end of the probe in close proximity to the epicardium.

75. The method of claim 74 wherein the probe is introduced through an intercostal penetration in the patient.

76. The method of claim 67 further comprising an electrode array including a plurality of electrically isolated electrode terminals.

77. The method of claim 67 wherein the electrode terminal comprises a single electrode adjacent a distal end of an electrosurgical probe.

78. The method of claim 68 further comprising applying high frequency voltage between the electrode terminal and a return electrode, the high frequency voltage being sufficient to volumetrically remove tissue at the target site.

79. The method of claim 78 wherein the return electrode is located on an external surface of the patient's body.

80. The method of claim 78 wherein the return electrode and the electrode terminal are both located on an electrosurgical probe.

81. The method of claim 67 further comprising controlling the depth of tissue removed from the myocardium.

82. The method of claim 67 further comprising locating electrically conductive fluid between the electrode terminal and the heart wall.

83. The method of claim 78 further comprising locating electrically conductive fluid between the electrode terminal and the return electrode and generating a current flow path from the electrode terminal through the electrically conductive fluid to the return electrode.

84. The method of claim 67 wherein the electrically conductive fluid comprises isotonic saline.

85. The method of claim 70 further comprising forming a channel with a lateral dimension of about 1.5 to 3.0 mm.

86. The method of claim 70 wherein the channel has a depth of about 1.0 to about 4.0 cm deep.

87. The method of claim 70 further comprising aspirating fluid and/or solid products from the target site.

88. An electrosurgical device for myocardial revascularization of a patient's heart tissue, the device comprising:

an instrument shaft having proximal and distal end portions and an electrode terminal disposed on the distal end portion; and

a connector within the shaft adapted for coupling the electrode terminal to a high frequency power supply for applying a high frequency voltage to the electrode terminal, the voltage being sufficient to effect the volumetric removal of heart tissue adjacent to the electrode terminal

89. The device of claim 88 further comprising a return electrode adapted for coupling to a high frequency power supply for applying a high frequency voltage difference between the return electrode and the electrode terminal, the voltage difference being sufficient to effect the volumetric removal of

heart tissue adjacent to the electrode terminal

90. The device of claim 88 wherein the shaft is a catheter shaft configured for endoluminal delivery into the patient's ventricular cavity.

91. The device of claim 88 wherein the shaft is a probe shaft configured for delivery into the thoracic cavity.

92. The device of claim 88 wherein the distal end of the shaft is sized for advancing into a space vacated by the removed heart tissue.

93. The device of claim 92 wherein the space is a channel having a maximum lateral dimension of 2.0 mm.

94. The device of claim 88 further comprising an electrode array disposed at or near the distal end of the shaft and including a plurality of electrically isolated electrode terminals, wherein current flow from at least two of the electrode terminals is independently controlled based on impedance between the electrode terminal and the return electrode.

95. The device of claim 88 wherein the maximum lateral dimension of the distal end portion of the shaft is less than about 1.0 mm.

96. The device of claim 94 wherein the electrode terminals are embedded in an insulating matrix to electrically isolate each terminal, the insulating matrix comprising an inorganic material.

97. The device of claim 89 wherein the return electrode is disposed on the probe and proximally recessed from

the electrode terminal.

98. The device of claim 89 wherein the return electrode and the electrode terminal are disposed on a distal surface of the shaft.

99. The device of claim 94 further comprising an array of return electrodes on a distal surface of the shaft and having an opposite polarity from the electrode terminals.

100. The device of claim 89 further comprising a guide catheter having a flexible steerable shaft for delivering the instrument shaft through a percutaneous penetration into the ventricular cavity.

101. The device of claim 89 wherein the return electrode is a dispersive pad in contact with an external body surface of the patient.

102. The device of claim 88 further comprising a fluid delivery element having an opening adjacent the electrode terminal for delivering electrically conductive fluid between the electrode terminal and the patient's heart tissue.

103. The device of claim 102 further comprising a return electrode, wherein the fluid delivery element is configured to generate a current flow path between the electrode terminal and the return electrode.

104. The device of claim 89 further comprising a fluid lumen within the shaft for delivering an electrically conducting fluid to the electrode terminal, wherein the fluid lumen is fluidly coupled to the return electrode and the electrode terminal.

105. The device of claim 88 further comprising a suction lumen within the shaft adapted for coupling to a vacuum source.

106. The device of claim 88 wherein the electrode terminal has a substantially annular shape.

107. An electrosurgical device for transmyocardial revascularization of a patient's heart tissue, the device comprising:

an instrument shaft having proximal and distal end portions and an electrode terminal disposed on the distal end portion;

a high frequency power supply for applying a voltage difference between the return electrode and the electrode terminal, the voltage difference being sufficient to promote revascularization of myocardial tissue in a region of the target site; and

a connector within the shaft for coupling the electrode terminal to the high frequency power supply.

108. The device of claim 107 further comprising a return electrode coupled to the high frequency power supply for applying a high frequency voltage difference between the return electrode and the electrode terminal.

109. The device of claim 107 wherein blood supply is restored to the myocardial tissue in the region of the myocardium by volumetric removal of a portion of the tissue in said region.

110. The device of claim 107 wherein the shaft is a catheter shaft configured for endoluminal delivery into the patient's ventricular cavity.

111. The device of claim 107 wherein the shaft is a probe shaft configured for delivery into the thoracic cavity.

112. The device of claim 107 wherein the distal end of the shaft is sized for advancing into a space vacated by the removed heart tissue.

113. The device of claim 112 wherein the space is a channel having a maximum lateral dimension of 2.0 mm.

114. The device of claim 107 further comprising an electrode array disposed at or near the distal end of the shaft and including a plurality of electrically isolated electrode terminals, wherein current flow from at least two of the electrode terminals is independently controlled based on impedance between the electrode terminal and the return electrode.

115. The device of claim 108 wherein the return electrode is disposed on the probe and proximally recessed from the electrode terminal.

116. The device of claim 108 wherein the return electrode is a dispersive pad in contact with an external body surface of the patient.

117. The device of claim 108 further comprising a fluid delivery element having an opening adjacent the electrode terminal for delivering electrically conductive fluid between the electrode terminal and the patient's heart tissue.

118. The device of claim 117 wherein revascularization of myocardial tissue is at least partly accomplished by volumetrically removing a portion of the tissue in said region.

119. The device of claim 117 wherein revascularization of myocardial tissue is at least partly accomplished by forming a channel within said region of the myocardium.--

Respectfully submitted,

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